

REPORT OF ALAN DUCATMAN, M.D.
In the case of Sullivan, et. al. v. Saint-Gobain Performance Plastics Company,
No. 5:16-cv-000125-GWC (D. Vt.)

Introduction

I have been retained by the Plaintiffs as an expert in the risks, medical effects, and health effects of exposure to Perfluorooctanoic Acid (PFOA), and in the design and implementation of a clinically-appropriate program of medical monitoring for residents of Bennington and North Bennington, Vermont, who have been exposed to PFOA via their drinking water.

Qualifications

I am a Professor of Public Health at West Virginia University School of Public Health and Professor of Medicine at West Virginia University School of Medicine. I am board certified in Internal Medicine and Occupational Medicine, and have independently practiced since 1982. In the past, I have been the Chair of the Department of Community Medicine in the West Virginia University School of Medicine for many years. I also have been a member of the American Board of Preventive Medicine, which determines credentials and qualifications for board certification, and Chair of the Residency Review Committee in Preventive Medicine, which accredits clinical residency training programs. I have participated on and chaired an external scientific advising committee to the Agency for Toxic Substances and Disease Registry (ATSDR) and the National Center for Environmental Health (NEHC) of the US Centers for Disease Control and Prevention (CDC) and have a Director's Award for outstanding service to this federal agency.

Before becoming a tenured professor at West Virginia University, I was Director of the Environmental Medical Service at Massachusetts Institute of Technology (1986-1992). Before that I was an active duty Lieutenant Commander in the U.S. Navy Medical Corps, responsible

for national and international consultation concerning environmental exposures of active duty service personnel and employed civilians (1983-1986).

I have published numerous original papers, reviews, and book chapters. I have written extensively about the relationship of environmental chemicals to human disease, including, but not limited to, perfluoroalkyl substances such as PFOA. I also perform research and publish peer review articles concerning quality assurance in health care, notably in the setting of ordering and interpreting clinical testing, and increasing the value of clinical testing. I am the recipient of honors and recognitions in my field. I have been asked to provide formal and informal health science advice to leaders of organizations such as the U.S. Centers for Disease Control and Prevention, nonprofit agencies with health and safety interests including the West Virginia Bureau for Public Health, state government, and industry.

I have significant and direct experience in evaluation and medical monitoring of humans exposed to PFOA. I am familiar with the C8 Health Project, which studied the health effects of PFOA and other perfluoroalkyl substances (PFAS) on a large population that was exposed to these chemicals in the mid-Ohio Valley. I have provided advice to the leaders of that Project, and have published 17 peer-reviewed articles relating to the PFAS, mostly from the C8 Health Project data. This included a summary article (published with members of the C8 Science Panel) which described the C8 Project's design, methods, and participants. I have led a team that analyzed data from the Project, and have been responsible for a website that provided open access to summary data from the Project. I have collaborated with scientists at other institutions regarding the PFAS. My work has addressed the effects of PFOA and other PFAS on liver function and its biomarkers, thyroid function, and on serum lipid levels (including total and LDL-cholesterol), among other subjects.

My perspective is that of a clinician, with a career spanning more than three decades caring for patients and populations who have had exposures that can harm their health. My CV is attached as Exhibit 1.

Facts and Data Considered; Materials Reviewed

In preparing this report, I have reviewed materials publicly available from the Vermont Department of Health (DOH) and the Vermont Department of Environmental Conservation (DEC), including the DOH summary of events, PFOA blood test results, PFOA blood test and exposure assessment results, private well testing results, and the map of the designated areas of concern. I also have reviewed the PFOA blood test results of the named plaintiffs who consumed water contaminated with PFOA. I am familiar with the medical and scientific literature in Exhibit 2, as well as the relevant papers listed in my CV, and other medical and scientific literature concerning perfluoroalkyl substances and their health effects, and concerning medical monitoring, and the opinions that follow are based on this literature, as well as on my decades of experience with medical monitoring programs, including the C8 Health Project, and are expressed to a reasonable degree of medical certainty.

Background

PFOA is a man-made toxic substance, also known as a “toxicant.” In Bennington and North Bennington (together, “Bennington”), drinking water wells have been contaminated with PFOA above health standards set by the State and by EPA for a period of time. Bennington people who consumed this contaminated water have above-background levels of PFOA in their blood serum. As of January 27, 2017, the average blood serum level of PFOA among the Bennington residents tested by DOH was 10 µg/l (micrograms per liter), compared to the mean background blood serum level in the US population of 2.1 µ/l, and the highest individual blood

serum level was 1125.6 µg/l. (107) (numerical references are from Exhibit 2). The blood serum levels of PFOA measured in the plaintiffs Sullivan, Addison, Sumner, and Hausthor are 24.8 µ/l, 40.9 µ/l, 305.1 µ/l, and 204.1 µ/l, respectively.

When drinking water is contaminated with PFOA, it is the experience from contamination in the mid-Ohio Valley, as well as from other sites around the world where drinking water has become contaminated, that the contamination is long-lasting and that the drinking water becomes the primary source of exposure to PFOA for those who consume it. This has been shown by the work of Emmett, Holzer, Steenland, and others. (2, 12) Consistent with the published literature, the Vermont Department of Health has found that PFOA levels in the blood of Bennington residents are strongly correlated with PFOA levels in well water. (107)

The population “half-life” of PFOA as measured in human serum has an arithmetic mean of about 3.8 years. (8, 9) We do not know the half-life of PFOA in other human organs, but we do know that PFOA is especially concentrated in the liver. (9) This means that those who drank the contaminated water in Bennington in the last 1-12 years likely have not excreted the PFOA that they have bio-accumulated in their bodies. This is also consistent with the measurement of above-background levels of PFOA in the blood serum of the exposed individuals, and the blood measures of exposure may understate the liver exposure.

In Bennington, there is established human exposure to PFOA through well water, and PFOA bio-retention in the exposed population. Thus, in Bennington, we know that exposures to PFOA above background levels have occurred, and that those exposed have retained this toxicant in their bodies.

Opinions and Bases for Opinions

Based on multiple peer-reviewed publications reporting results from exposed communities in the United States and around the world (including, but not limited to the well-

known C8 study of exposed communities in West Virginia and Ohio), and from governmental publications and assessments, we know to a reasonable degree of medical certainty that human exposure to PFOA leads to alterations in the biomarkers for and function of the liver, the thyroid, the immune system, and other organs. (1, 3, 13, 14, 15, 18, 19, 22, 28, 29, 31, 34, 35, 44) PFOA exposure is associated with excess risks of adverse health effects, as compared to the background population, and we now have clinical population outcome data on these health effects, which are summarized below. (Id.). It should be pointed out that the known associations and problems have increased over time as additional scientific work is done. This list is intended to reflect current knowledge and to be illustrative, not exhaustive:

Consistently established in multiple venues:

- ☐ Higher total and LDL (“bad”) cholesterol including additional levels above treatment cut-offs; (13-17, 21-28)
- ☐ Adversely altered (higher) “liver function” tests associated with exposure; (28, 29, 30, 31, 32)
- ☐ Immune suppression including but not limited to decreased vaccine uptake; (33, 34, 35, 36, 37, 38, 39, 62, 63, 64)
- ☐ Adversely altered and abnormal uric acid (gout is more likely than not, higher uric acid is near certain); (40, 41, 42, 43)
- ☐ Endocrine disruption including but not limited to thyroid abnormalities (abnormalities of thyroid function are near certain, increased thyroid disease requiring treatment is more likely than not. Other types of endocrine disruption are more likely than not). (44 - 58)

Probable excess risk, effects with a preponderance of evidence, more likely than not, include:

- ☐ Urogenital cancers including kidney and testicular cancer;(59-61)
- ☐ Asthma; (38, 62-64)
- ☐ Developmental abnormalities including slightly lower birth weights and more markedly affected subsequent adiposity through childhood development (increased

adiposity of children at moderately increased exposure doses, with different effects at very high doses); (68 - 84, 86)

- ☐ Neurodevelopmental abnormalities including ADHD following in utero exposure; (96,97,98,99,100)
- ☐ Shorter duration of breast feeding; (65)
- ☐ Toxicant associated steatohepatitis (abbreviated as TASH, NASH, or NAFLD) as a likely explanation for several of the near certain findings. (32,66,67)

Probable excess risks needing additional investigation, include:

- ☐ Excess ulcerative colitis; (85)
- ☐ Prostate cancer; (59, 60,61, 107)
- ☐ Pregnancy induced hypertension; (87)
- ☐ Fecundity (delayed time to pregnancy) ;(72,86, 91,92,93,94,95)
- ☐ Osteoarthritis; (88,90)
- ☐ Kidney function (The direction of association is likely to be both cause and effect, and the interpretation of other outcomes are affected by kidney function. It is therefore important to collect this data as part of the biomonitoring effort regardless of causation) (42)

Adverse instances of exposures and of health effects have been documented in multiple settings of PFOA-exposure community survey data, as well as from public health registries such as NHANES in the United States and internationally. These adverse health effects pertain to a wide variety of individuals, and, to a reasonable degree of medical certainty, require the additional medical attention attained through medical monitoring for the relevant health condition and/or clinical biomarker measure. A medical monitoring program for the individuals in Bennington who have been exposed to PFOA through contaminated water should include monitoring for each of these health effects to the degree that useful testing exists. From my perspective, and based on what we know today, including the literature cited in Exhibit 2, this list would include:

A. A medical survey, based on the C8 Health Survey, and updated to include new scientific information, such as (but not limited to) diagnoses of gout and steatohepatitis (non-alcoholic fatty liver disease), as well as the birth weight and then developmental weights/heights of children. It should include a review of systems that addresses the frequency of infectious diseases and respiratory diseases, especially in children. An example of a successful questionnaire used for PFOA and other PFAS in the community setting is the C8 Health Survey Questionnaire. I consulted on the development of this questionnaire, which is available online at <http://www.hsc.wvu.edu/media/4542/c8-health-project-questionnaire-v7-29-05.pdf>. B.

An evaluation of relevant serum PFAS concentrations, now believed to be PFOA only. There should be a prior review of any processes and procedures that may indicate the presence of additional PFAS in drinking water so far not detected, as happened recently following application of new testing techniques in the Cape Fear, NC watershed. (See for example, <https://deq.nc.gov/news/hot-topics/genx-investigation> as well as <https://theintercept.com/2017/06/17/new-teflon-toxin-found-in-north-carolina-drinking-water/>).

C. Clinical laboratory testing of biomarkers pertinent to PFAS exposure. The clinical laboratory tests collected in C8 Health project can be viewed on line at <http://www.hsc.wvu.edu/resoff/research/c8/results/clinical-laboratory-tests/>. Guided by the results of this precedent population testing and current information, the following blood tests are currently proposed:

Albumin (serum)

Alkaline phosphatase (serum)

Alanine aminotransferase (ALT, formerly SGPT)

Bilirubin, direct and total

Blood urea nitrogen (BUN)

Cholesterol: total, LDL, HDL, and VLDL

C-reactive protein

Creatinine (serum)

Gamma-glutamyl trans peptidase (GGT)

Globulin (Total)

Glucose (serum)

Hemoglobin A1C (glycosylated hemoglobin)

Immunoglobulin serum concentrations of IgA, IgE, IgG, and IgM

Insulin

Nonalcoholic fatty liver disease additional marker - more sensitive markers such as cleaved cytokeratin fragments or as recommended by an expert panel, to be followed by right upper quadrant (liver) ultrasound in participants with suggestive findings and no previous explanatory diagnosis (including clinician attestation about diagnosis in medical records).

T-helper cytokines: interferon-gamma, interleukin-2, Interleukin 4

Thyroid stimulating hormone (THS). T3 uptake, and other thyroid markers as recommended by expert consensus.

Triglycerides

Uric acid ¹

¹ These tests are related primarily to liver function, immune function, kidney function, endocrine function, and lipid status. Compilation of the tests to be performed and other elements of this medical monitoring program should benefit from collaborative review and comment work, with input from peer expert reviewers from different disciplines. Such collaboration leads to better clinical biomonitoring programs and the advancement of science. (5)

This medical monitoring program should continue through a minimum 4 PFOA half-lives (about 15 years) since that is the time required for about 95% of the contaminant to be excreted. Ideally, this program would continue for the life of the participants, since feared outcomes clearly apply to the life of participants.

For these residents of Bennington, Vermont, who have been exposed to PFOA through consumption of contaminated drinking water, and have above-background levels of PFOA in their blood, these above-background levels of PFOA result in increased risks of the illnesses and adverse health conditions listed above. To a reasonable degree of medical certainty, a medical monitoring program is clinically necessary for this population to detect known PFOA-related adverse health effects as early as possible in order to minimize disease and improve health outcomes. (5) The earlier these health conditions are detected, the more effectively they can be treated.

Adequate medical monitoring for this exposed population would have two temporal components. Medical screening (initial testing) focuses on protecting the health of an exposed population, generally emphasizes early detection and response to clinical outcomes of exposure, and would include screening for the health effects and risks listed above. Medical surveillance collects prospective data on the exposed population (providing a means to follow the exposed individuals over time), and adds the potential to detect the presence of additional hazards over time, which has the potential to inform about the ongoing exposure status and to add an element of protection. For industrial chemicals, the Department of Labor, Occupational Safety and Health Administration provides support to industry and explains the role of medical monitoring for employers of workers, recognizing that industrial chemicals in the workplace can be hazardous and that one aspect of a mitigation strategy is medical monitoring.

(<https://www.osha.gov/SLTC/medicalsurveillance/> accessed 6/17/17). The concepts translate to non-occupational settings when populations are exposed to industrial chemicals.

A typical medical surveillance program collects survey questionnaire demographic information describing the participants, survey questionnaire health information directed at the population needs, as well as laboratory and/or radiographic information pertinent to detection of known exposure risks. Depending on the nature of exposure, the survey may collect targeted health information from the participants, as this can inform the data collected and seamlessly can be turned into de-identified community summary data. Medical surveillance may also collect simple physical examination information such as height, weight, and blood pressure. There usually is a centralized data base so that meaningful reporting of summary data and key findings can occur.

Other important benefits to uniform data storage include the ability to provide personal materials back to properly-identified participants who have lost their original data (in the C8 Health Project, participants were provided their personal data, and there is a means for participants to identify themselves and obtain their data again). It is also very helpful to the members of the affected community to have an accessible health communications strategy that provides information and processes, procedures, and summary findings for the benefit of the community, but available to anyone with internet access. This should be transparent, accessible to anyone, and have no means to identify individuals. The point about identification is important. In the C8 Health Study, focus group interviews of potential participants repeatedly mentioned loss of privacy as their largest fear. Any process which threatens loss of privacy is problematic. In that regard, the federal government provides guidance about the public reporting of rare diseases in small populations, with helpful guidelines for protecting privacy.

The truism that individuals are unique is an argument **for** an appropriate medical monitoring program for the exposed population, rather than against, or a determinant of who should be included. In general, the uniqueness of individuals is understood in the medical and public health communities to illustrate the need to monitor more of the exposed population, not less. That people have varying medical histories, medical co-morbidities, and inherited genetics means that we are aware of excess risks to the exposed population, but generally are unable to predict in advance who in the population with demonstrable excess risk will get which disease known or suspected to be associated with exposure, or when. In addition, we cannot predict the severity of the health effects for any particular individual. There are no known medical co-morbidities that mitigate the risks from PFOA exposure. Rather, we must work to identify co-morbidities that may further increase these risks.

Consider the half-life established for PFOA, by Olsen and colleagues from 3M, is a population mean, because the individuals tested did not all have the same rates of excretion. The data are valuable despite the differences among those who were tested. (8) In health care, health professionals in many organizations collect data and become increasingly expert at predicting average tendencies, including factors that bring increased risk, yet we remain persistently mediocre or worse at predicting who among the high risk community specifically will be the one(s) to suffer the outcome(s). This necessitates monitoring all of an exposed population, and is why children are monitored for lead exposure in communities where that exposure is possible.

Individual medical records and histories are irrelevant to whether a medical monitoring program, as described above, is clinically necessary for exposed Bennington residents. While individualized factors, such as age, sex, height, weight, prior medical conditions, and a host of

other differences among/between all people, can and do inform data collection, this information can be collected most efficiently and effectively through an appropriate survey, as part of the medical monitoring program.

For example, we screen a small subset of adults for lead poisoning -- workers with potential lead exposure -- because we generally can target those as being most at risk. We screen many thousands of young children, including those who live in areas with different risks of lead poisoning, because the exposure is even more serious in children, and the behaviors that lead to childhood exposure are highly individualized and hard to predict. Further, we know that some conditions, such as inadequate diet, may increase the risk of childhood lead poisoning, but this does not dissuade us from monitoring, or limit those whom we monitor.

Similarly, we do not limit monitoring based on more than one source of exposure. We know that workers in a benzene monitoring program may have exposure from two (or more) sources, such as work and personal cigarette smoking, but that supports the need to include all workers, smoking and nonsmoking, in the monitoring program, and to pair demographic data collected in a worker survey to the laboratory results. We also know that some of the risks of asbestos exposure are potentiated by cigarette smoking (such as lung cancer and parenchymal asbestosis), whereas other diseases (such as malignant mesothelioma) are related to asbestos exposure and not potentiated by smoking. Smoking status is determined in surveys, but the status does not determine eligibility for monitoring in affected communities. It is also why demographic and independent risk data are collected in the survey as part of the program which collects health and exposure data from the participants rather than trying to extract it from medical records. It should be noted that no one in Bennington has a current, formal diagnosis of

a PFAS-related disease that would exclude participation. When such formal declarations are made, the exclusions can be added.

In clinical care, if a risk is known to exist, we monitor and evaluate that risk. In Bennington, multiple adverse health risks are present in the exposed population as a direct result of their exposure to PFOA in drinking water, and for this reason they should be monitored, irrespective of individual differences. The Bennington population is homogenous only in their exposure to PFOA through their drinking water, and in their resulting increased risks of adverse health outcomes and abnormal biomarkers of various body system functions. These homogeneities determine the medical necessity of an appropriate medical monitoring program, just as exposure to asbestos or to lead determines the necessity of participation in an asbestos or lead medical monitoring program. Individualized predictions of outcomes are not possible, nor are they beneficial to the exposed population, because we do not know enough to make such individualized assessments. But, we do know that every exposed person faces increased risks of related adverse health effects.

The negative consequences of requiring further homogeneity among the exposed population, or individualized determinations of who among this exposed population should be included in the monitoring program, would be at least twofold. First, the cost of the monitoring would increase, because the review of medical records for inclusion/exclusion criteria is more expensive and far less targeted than gathering the same information through a participant survey. Second, the goal of such an effort would be to exclude members of the exposed population. Exclusion of these exposed individuals might carry health impacts to them, and would decrease the effectiveness of the program for data collection and advancing medical and scientific knowledge concerning the health effects of exposure to PFOA.

The possibility that members of the exposed population may have been exposed to PFOA through other means does not diminish the clinical necessity of medical monitoring for the exposed population. First, the literature establishes that drinking water contaminated with PFOA is the primary source of exposure for those who consume it, and, consistent with this literature, the Vermont Department of Health has found a strong correlation between the PFOA levels in the blood of Bennington residents and the PFOA levels in well water, a finding fully compatible with and predicted by existing peer literature. (2, 12, 107) Second, possible subsidiary sources of PFOA – to the extent they exist - do not impact the clinical necessity of medical monitoring based on this primary exposure. Subsidiary sources are expected and documented in predecessor efforts for populations who have consumed contaminated water and do not negate the findings about primary sources in numerous studies including but not at all limited to the population investigated in the C8 Health Study. (2, 12, 104, 105) When drinking water is not contaminated, however, community exposures are from other sources, and, biological burdens are lower. (106) The exposure through contaminated drinking water and documented levels of PFOA in blood serum establish the foregoing health risks and justify a medical monitoring program for the exposed population in Bennington. Any subsidiary sources of exposure support the collection of additional exposure data in the survey history, rather than impacting the clinical need for medical monitoring of the exposed population.

Similarly, the possibility that Bennington residents exposed to PFOA in their drinking water may already have had one or more of the adverse health conditions linked to PFOA exposure, or may have other risk factors for one or more of these adverse conditions (such as smoking or obesity), does not argue against the creation of a medical monitoring program for the entire exposed population. PFOA exposure is known to cause increased health risks to the entire

group of people exposed, regardless of their medical state, and some may be more vulnerable because of their medical state. No one has been declared to have a PFOA associated condition by any formal body, and those how may have outcomes known to be associated with exposure need not have just one such outcome. Further, until biological burdens are measured, ecologic data must substitute for biological burden data. To the extent individuals within the exposed population have a pre-existing reason for a particular test or monitoring measure that is independent of their PFOA exposure, that is not a justification for denying them access to the monitoring program necessitated by their PFOA exposure. To the contrary, increased preexisting risk is a reason to increase our attention to medical monitoring.

Let's return to the example of medical monitoring of children in communities for lead poisoning. The proper role for gathering individualized details concerning the monitoring program participants is planned as part of the medical monitoring program. When a disease state is detected, such as lead poisoning, additional medical (and other) data are collected after the program detects the poisoning, when this subsequent information is targeted to need, and can inform the administration of the program, the treatment of the participants, and the ongoing generation of data and research.

In my career, I have participated directly in the following medical monitoring projects:

- ☐ the C8 Health Study, which began in 2005 and now is in its second phase. I consulted in the choice of the initial phase laboratory tests, and in the design of the initial phase study questionnaire;
- ☐ the U.S. Navy Asbestos Medical Surveillance Program, which involved many thousands of Department of Defense employees, during my active duty as a Lieutenant Commander in the U.S. Navy Medical Corps from 1983-1986;

- Medical surveillance programs, including surveillance for lead poisoning, at the Massachusetts Institute of Technology, where I was Director of the Environmental Medical Service from 1986-1992;
- the West Virginia Lead Poisoning Prevention Program, as a consultant for program design and for patients determined to have lead poisoning, from its creation in around 1992-present;
- multiple medical surveillance programs for workers at West Virginia University, from 1992-present.

In all of these projects and programs, admission to the program was based solely on exposure to the relevant toxic substance or hazard (PFOA, asbestos, lead, noise, etc.) and the risks resulting from that exposure, and was available to entire exposed population. None of these projects and programs involved or included pre-admission review of medical records, and none was based on individualized determinations of who among the population considered to be exposed should be excluded or participate. The programs were based on the potential for exposure.

Further, all clinical interventions require consideration of potential harm, but this provides no basis for denying or individualizing the medical monitoring program for Bennington residents exposed to PFOA. Potential issues relating to harms can and should be dealt with through strong health communications and informed choices. They are not sufficient reasons for narrowing those eligible for monitoring where there exists excess risks and appropriate tests responsive to these risks. In the C8 Health Study, we have random participant survey evidence that participants appreciated the experience, and some participants sought and received further care from their doctors as a result. The C8 Health experience is that people exposed to PFOA

overwhelmingly want to understand their exposure and potentially-associated health outcomes, and are understandably anxious to learn more, rather than less. Giving primacy to a concern that they will misunderstand or misuse their data creates, rather than relieves, anxiety and legitimate concerns over health.

Moreover, individualized review of medical records, and individualized design of a monitoring program, are time-consuming, expensive, and inefficient. Many participants in the program will have normal test results and biomarkers, and review of their medical records would serve no medical purpose. In the monitoring programs listed above, individualized consideration and, if needed, record review, was employed only for those whose tests were abnormal, as part of insuring appropriate investigation of those results, and, if appropriate, further treatment. Similarly, individualized design of testing protocols would make the Bennington program far more expensive and less efficient. I have not participated in a medical monitoring program in which we attempted to sculpt the program elements to each individual based on prior review and calculation.

From a medical perspective, another consideration is the protection of the participants' privacy and confidential medical information. In the C8 Study, focus groups of the exposed population repeatedly expressed concern over whether their confidential information would be available to the company that was responsible for their exposure, and many would not have participated in the monitoring program absent firm protocols protecting their privacy and confidential medical information.

For all of these reasons, I reject any suggestion that individual uniqueness is an argument against a common medical monitoring program for the Bennington residents who have been exposed to PFOA in their drinking water, or that individual histories or records are relevant to

determining the clinical appropriateness of medical monitoring, or who among the exposed population should be included in the program. Doctors reject the idea that individual uniqueness is an argument against the usefulness of evidence-based testing and evaluation in any clinical setting.

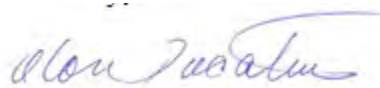
Prior Testimony

A list of other cases in the last four years in which I have testified as an expert at trial or at deposition is attached as Exhibit 3.

Compensation

West Virginia University charges \$600 per hour for my time in preparing this Report.

This the 1st day of September, 2017.



Alan Ducatman, M.D.

REPORT OF ALAN DUCATMAN, M.D.
In the case of Sullivan, et. al. v. Saint-Gobain Performance Plastics Company,
No. 5:16-cv-000125-GWC (D. Vt.)
Exhibit 1 (CV)

Dec 27, 2016

CURRICULUM VITAE
ALAN M. DUCATMAN, MD, MSc
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Adjunct Professor, WVU School of Medicine

PERSONAL DATA

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Personal Statement: I have been a successful leader of occupational and environmental health enterprises in research, education, and clinical as well as consultation service. Settings for my work have included military service, compliance oversight in highly technical workplaces, and academic healthcare. I have been a successful consultant to government, industry, and labor entities. My work goal is simply to provide public health value to decision-making, whether the work is about service, teaching, or research.

EDUCATION

1978	MD	Medicine, Wayne State University, Detroit, MI
1974	MSc	Environmental Health. City University of New York—Hunter College, and Mt. Sinai School of Medicine, New York, NY
1972	AB	Analytical Biology. Columbia College, New York, NY

POSTGRADUATE TRAINING

1982	Fellowship in Occupational Medicine, Mayo Clinic, Rochester, MN
1981	Medical Residency. Mayo Clinic, Rochester, MN
1979	Medical Internship. Brown University, Providence, RI

ACADEMIC APPOINTMENTS

2012-present	Professor of Public Health, and Professor of Medicine, West Virginia University
1992-present	Professor of Medicine, West Virginia University School of Medicine
2012-2015	Professor, Department of Emergency Medicine, West Virginia University School of Medicine
2011-12	Professor and Interim Founding Dean, Professor of Public Health, West Virginia University School of Public Health
2002-present	Adjunct Professor, Department of Animal and Nutritional Sciences, Davis College of Agriculture, Natural Resources, and Design, West Virginia University
1994-97	Adjunct Professor of Medicine. Medical University of South Carolina

- 1991-2004 Clinical Associate Professor of Preventive Medicine. University of Mississippi School of Medicine, Jackson, MS
- 1990-93 Adjunct Associate Professor of Public Health (Environmental Health). Boston University School of Medicine, Boston, MA
- 1990-93 Clinical Associate in Neurology, Massachusetts General Hospital, Boston, MA
- 1987-89 Lecturer on Medicine. Harvard Medical School, Boston, MA
- 1983-86 Assistant Professor of Community Medicine, Eastern Virginia Medical School, Norfolk, VA

PROFESSIONAL EXPERIENCE

- 2012- Tenured faculty in the School of Public Health, co-appointment in the School of Medicine, Department of Medicine. Responsible for clinical care, graduate teaching (including for-credit as a member of the graduate faculty), funded research, and external consultation to industry, labor, government, and non-profit organizations. More recent duties also include for-credit teaching of true undergraduates.
- 2011-2012 **Interim Founding Dean**, West Virginia University School of Public Health. The School of Public Health enrolls over 170 master's and PhD graduate students in the MPH, the PhD in Public Health Sciences, and the MS in School Health Education.
- 1997-2011 Appointment as **Chair**, Department of Community Medicine, West Virginia University School of Medicine

The Department of Community Medicine has grown and evolved to become the WVU School of Public Health. This is the first fully new school at WVU in more than five decades. Faculty participate in and direct programs in a Prevention Research Center, an Injury Control Research Center, an Institute for Occupational and Environmental Health, a Health Services Research Center, and a Center on Aging, as well as the Mary Babb Randolph Cancer Center and other organ-based research centers. Faculty focus much of their research in population health, health services, community intervention, and community health in rural settings.
- 1996-97 **Interim Chair**, Department of Community Medicine, West Virginia University School of Medicine.
- 1992-97 **Director**, Institute of Occupational and Environmental Health (IOEH), West Virginia University School of Medicine

The IOEH sponsors NIOSH-supported occupational medicine residency training program and participates in multidisciplinary research and teaching activities. Service and research are provided for clinical care and outcomes, environmental health, toxic exposure assessment, health services research, ergonomics, and epidemiology. IOEH faculty provide clinical care, graduate and continuing medical education, grant-funded research with an emphasis on clinical outcomes, and workplace epidemiology consulting to government agencies, industry, and labor. A primary goal of the Institute is decreasing the frequency and severity of work-related injury in West Virginia.
- 1992 Faculty member, WVU Institute of Occupational and Environmental Health
- 1986-92 **Director**, Environmental Medical Service, Massachusetts Institute of Technology, Cambridge, MA

Responsible for Occupational/Environmental Health at Massachusetts Institute of Technology and affiliated institutions with over 20,000 employees, as well as students and official visitors. Supervised 50 professionals and support staff, with a budget in excess of

\$3 million. Provided service to MIT in biohazards, industrial hygiene, radiation protection, nuclear reactor safety, occupational health, and toxicology. In addition, provided selective research and consultation to governments, industry, and workers.

- 1983-86 **Director**, Professional Occupational Health Branch, United States Navy Environmental Health Center, Norfolk, VA (LCDR, Medical Corps).
- Responsible for worldwide consulting concerning occupational health problems of the Navy's 1.1 million employees. Reported to the Navy Inspector General concerning the status of occupational health care at Navy clinics. Provided quality assurance assessment for asbestos medical surveillance
- 1982-83 **Director**, Occupational Medical Services, Columbia Park and Brooklyn Park Medical Groups, Columbia Park and Brooklyn Park, MN. Founded a successful and rapidly expanding private occupational health practice within a multispecialty group.

PATIENT SERVICE

Outpatient Care Devise and conduct medical surveillance programs for industry, labor, and government in West Virginia and surroundings. Conduct clinical referral evaluations of patients with known or suspected environmental exposure. Patients come to our referral clinic from all counties in West Virginia and seven neighboring states.

Environmental Health Consulting: Evaluate and ameliorate environmental risks on behalf of government, industry, workers, and citizen groups.

CERTIFICATION AND LICENSURE

Certification: American Board of Preventive Medicine (Occupational Medicine)
January 24, 1983 - Certificate Number 21816

American Board of Internal Medicine
September 16, 1981 - Certificate Number 79779

Licensure: West Virginia - July 13, 1992 - Perm. 16937

Military Service: LCDR, Medical Corps, USNR, 1983-86
CDR (inactive) USNR, 1986-91

UNDERGRADUATE AND MEDICAL STUDENT TEACHING

Annual

- 2017- PUBH 243 Global Occupational and Environmental Health (Required true undergraduate course in new public health program. Current enrollment, year one, 29 students)
- 2001-2005 MDS 124: Community Health and Disease (1 hour).
- 2000-2005 Pathology 751: Environmental Diseases (1 hour).
- 2000- CCMD 712 and CCMD 713: Public Health Topics in Disease Status and Disease Prevention.
- 1997-2001 Orientation 60 (undergraduate), 1 hour
- 1996-2001 **West Virginia School of Osteopathic Medicine.** MSI Lectures in Occupational and Environmental Health – 6- 8 hours per year

Intermittent

1996	Physical diagnosis for medical students
1994	Medical University of South Carolina. Summer M2 Lectures, Environmental Health
1994-95	Uniformed Service University of Health Sciences (Bethesda, MD), Occupational and Respiratory Disease (2 contact hours)
1993	Medical Aspects of Environmental Health, West Virginia University , 2.0 credits
1991-92	Harvard University. Principles of Occupational Health - 4.0 credits, undergraduate faculty
1987-1991	University of Mississippi. Occupational Hazards of Rural Areas, Toxic Hazards in the Workplace, Environmental Dust Diseases. University of Mississippi School, of Medicine, Jackson, MS (Visiting Associate Professor, undergraduate medical education)
1990	University of Mississippi. Undergraduate Medical School Course (1 day) Occupational Medicine: An Environmental and Workplace Imperative (Mississippi Physicians and Nurses also attended)
1987	American Industrial Hygiene Association. Toxicology. American Industrial Hygiene Association. ABIH Certification Exam Review Class. Faculty
1973-74	Hunter/CUNY. Physiology Laboratory. Hunter/CUNY- 2.0 lab credits instructor

Graduate Teaching

1997-2015	West Virginia University Master of Public Health Program, Ph. D program. OEHS 601 (previously PUBH 601, 610, and 650): Environmental Health (Core Curriculum) - 3 credits. Principle Instructor and/or co-principal instructor. Course is now provided online, and in the classroom. Currently, Dr. Ducatman is the primary instructor for the online section (20-50 enrollees).
1999- 2012	CMED 691A/PUBH 605: Introduction to International Public Health. Environmental influences on International Health (1 hour).
1997-2003	CMED 791C: Advanced Topics in Toxicology - 1 credit Special Projects and Independent Study – Variable Credit
1997-present	Plan of Study Committee – IOEH Residents
1995	Critical Ethical and Legal Issues in Health Care, 3.0 credits
1987-92	Harvard School of Public Health. Organic Solvents. Fundamentals of Industrial Hygiene. (Twice annually; graduate visiting lecturer)

Undergraduate Teaching

2016-present	PUBH 243. Introduction to Global Occupational and Environmental Health. 3 Credits. Lecture materials and student presentations are archived on-line. Twenty-seven students in 2016.
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Doctoral Committees

2012-13	Member, PhD in Public Health Sciences Committee for Omayma Alshaarawy.
2011-12	Member, PhD in Public Health Sciences Committee for Sarah Geiger

2009-10 Member, PhD in Public Health Sciences Committee for Joseph Putila
 2009-2011 Member, PhD in Public Health Sciences Committee for Loretta Cain

Clinical Teaching

1993-2002 Residency Director, Occupational and Environmental Medicine, West Virginia University.
 1992- Medical student and resident rotations in Occupational Environmental Medicine, West Virginia University. Classroom teaching in environmental health; Clinic teaching in introduction to clinical medicine.
 1987 Resident Training Advisor, **Boston University School of Public Health**. Residency rotations
 1989 Resident Training Advisor, **University of Kentucky**, Department of Preventive Medicine and Environmental Health. Resident 3 weeks at MIT. 40 hours/week.

MEMBERSHIPS ON SUPERVISING COMMITTEES AND BOARDS OF TRUSTEES

West Virginia and Region

2016-present Advisory Committee to West Virginia DHHS, Bureau for Public Health. WV Childhood Lead Poisoning Prevention Council
 2013-present West Virginia Health Innovation Collaborative, member (for WV DHHR Cabinet Secretary)
 2012 West Virginia Public Health Assessment Committee
 2011-2014 Governor's Advisory Council on Substance Abuse
 2010 External advisory member for health communications, Marietta (OH)/Mid-Ohio Valley (WV) US EPA Workgroup
 2009-present West Virginia Bureau for Public Health Cancer Cluster Work Group
 2006 Monongalia County All-Hazards Advisory Committee
 2006 ATSDR State Environmental Waste Site Planning Committee
 2005 West Virginia Leadership Council on Public Health Threat Preparedness
 2003 West Virginia Heart Disease Program Advisory Council, WV Bureau for Public Health
 2003 ATSDR Cooperative Programs Partner, WV DHHR
 2003 Ad Hoc Potassium Iodide Policy Review Committee, WV Bureau for Public Health
 2003 Monongalia County Health Department Threat Preparedness Advisory Committee
 1999 Technical Assistance and Training Subcommittee, WV Bureau for Public Health
 1999-2003 Lead Poisoning Prevention Committee, WV Bureau for Public Health
 1999 Healthy People 2010 Cancer Work Group
 1999 Healthy People 2010 Occupational Safety and Health Work Group
 1998 Executive Council, WV Public Health Association
 1998 Steering Committee, Tri-State (Southeast) Public Health Leadership Institute
 1997-98 WV Bureau for Public Health Medical Waste Advisory Committee
 1997-2000 Chair, WV Public Health Association Committee for Continuing Education
 1997 Steering Committee, WV Bureau for Public Health Transitions Project
 1995-1998 Lead Abatement Advisory Committee, WV Bureau for Public Health and Department of Environmental Health
 1993-2009 WV Poison Control Center Advisory Board
 1993-94 Grant Proposal Reviewer, WV University Injury Control Training and Demonstration Center.

National

2016 Ad hoc reviewer for Centers for Disease Control, Agency for Toxic Substances and Disease Agency for the work entitled "Health Consultation, Dimock Site." Published May 24, 2016
 2014-2015 Member, Health Effects Institute – Special Committee on Unconventional Oil and Gas

Development

2008-present Accreditation Council for Graduate Medical Education (ACGME) – Board of Appeals Panel member).

2007-2008 Member, Program Peer Review Subcommittee, Board of Scientific Counselors, National Center for Environmental Health/Agency for Toxic Substances and Disease Registry.

2005-2008 Board of Scientific Counselors, National Center for Environmental Health/Agency for Toxic Substances and Disease Registry. Appointed Committee Chair, August 2007; term ended October 2008.

2004-2009 Wayne State University, External Peer Review for Internal Research Grants Committee

2002-2004 Strategic Medical Intelligence Section, Department of Justice and University of Pittsburgh

2002-2003 American Board of Preventive Medicine. Core Examination Committee.

2002-2007 University of Kentucky Prevention Research Center, Markey Cancer Center; Community Advising Committee through 2003, Scientific Advisory Committee from 2003.

1999-2004 Residency Review Committee; Accreditation Council on Graduate Medical Education-Preventive Medicine, Appointed Vice Chair, 2002; Appointed Chair, 2004.

1998-2004 Board of Regents, American College of Preventive Medicine

1993-2002 American Board of Preventive Medicine, Trustee

Chair: Client and External Relations Committee, 1992-99

Chair: Combined Preventive Medicine/Internal Medicine Residency Training Committee

1993-95 International Union of Operating Engineers. National HAZMAT Program Board of Scientific Advisors

1988-92 Residency Advisory Committee, Boston University Medical Center Occupational Health Program

1988-95 American Board of Preventive Medicine/National Board of Medical Examiners. Occupational Medicine Examination Committee.

1985-2003 American College of Occupational and Environmental Medicine. Practice Committee.

International

2015-2016 International Agency for Research on Cancer (IARC). IARC Monographs Working Group for Volume 115 – “Some Industrial Chemicals.”

University

2016-present Elected Representative, School of Public Health Faculty Council

2016-present Search Committee, Departmental Chair, Occupational and Environmental Health Sciences

2016-present Curriculum Committee, School of Public Health

2015-16 Promotion and Tenure Committee Member, School of Public Health

2013 Search Committee Member, School of Dentistry

2012 WVU Energy Council

2011 Member, Internal Advisory Committee, Research Training in Behavioral and Biomedical Sciences T32 Grant

2011- Member, Search Committee, Family Medicine Chair

2010- Member of the MD/PhD Admissions Committee

2010- Member of the MD/PhD Advisory Committee

2010-2011 Clinical Council of Chairs

2010 Member of the Discovery and Innovation Input Group, WVU Strategic Planning Council

2009 Member of Search Committee for WVU Provost

2007-2009 Steering Committee Member, WVU National Children’s Center Project

2006-2008 Steering Committee Member, Center for Immunopathology and Microbial Pathogenesis

2005-2008 Steering Committee Member, Center for Respiratory Biology and Lung Disease

2005-present Steering Committee Member, Injury Control Research Center

2004 Chair, United Way Campaign, School of Medicine

2003-2009 Scientific Advisory Board, School of Medicine

2003-2005 West Virginia Prepares: Virtual Medical Campus Continuing Education Partnership Advisory Board

2003 Search Committee Chair, Center for Rural Emergency Medicine Director

2002-2010	Executive Council (formerly known as Council of Chairs)
2001-2007	Mary Babb Randolph Cancer Center (MBRCC) Prevention, Education, and Outreach Advisory Committees
2001-2003	Prevention Research Center (PRC) Executive Planning Committee
2000-2001	Clinical Research Development Grant Study Section
1999	Ad hoc interdisciplinary committees
1999	Internal Reviewer, Grants and Contracts, West Virginia University School of Medicine
1997-2009	Basic Science Chairs Committee
1995-1997	External Advisory Committee, Department of Microbiology and Immunology
1992-1997	West Virginia University Safety Committee
1992-1999	School of Medicine Clinical Council
1992-2002	School of Medicine Executive Committee (Executive Faculty)

EXTERNAL PEER REVIEW

Peer Publications reviewed (by journal)

2016	Environmental Research (3), Environmental Toxicology and Pharmacology (2), PLoS ONE
2015	Environmental Health (2), Environmental Health Perspectives, Environmental Research (2), Military Medicine, Nutrition and Metabolism, PLoS ONE (Ad hoc reviewer for all)
2014	Environmental Health Perspectives (2), Environmental Research (3), Environment International, Occupational Medicine (2), Toxicology Letters (2). (Ad hoc reviewer)
	American Journal of Industrial Medicine (contributing editor)
2013	BMJ (Open), BMC Endocrine disorders, Diabetologia, Environmental Health Perspectives, Environment International, Nutrition and Metabolism, Public Health Reports (ad hoc reviewer)
2011	Archives of Environmental and Occupational Health (ad hoc reviewer)
2010	Public Health Reports (ad hoc reviewer)
2006-present	Journal of Occupational and Environmental Medicine (ad hoc reviewer)
2006-present	International Journal of Occupational and Environmental Health (ad hoc reviewer)
2005-present	Environmental Health Perspectives (ad hoc reviewer)
1990-	American Journal of Industrial Medicine (Contributing Editor)
2003	National Occupational Injury Research Symposium (abstract reviewer)
2003	USEPA reviewer: Human Health Research Implementation Plan for the National Health and Environmental Effects Research Laboratory
1996-2002	International Journal of Occupational Health (ad hoc reviewer)
1995	Southern Medical Journal (ad hoc reviewer)
1994	Cancer Prevention International (Topical Editor: Occupational and Environmental Health)
1994	American Journal of Public Health (ad hoc reviewer)
1993	Agency for Toxic Substances Disease Registry, Center for Disease Control, Case Studies Reviewer. Ionizing Radiation ATSDR 34; Oct. 1993.
1992-93	Applied Radiology (Environmental Editor)
1991	Journal of Occupational Medicine (ad hoc reviewer)
1990	Toxicology, Occupational Medicine and Environmental Series (TOMES), MICROMEDEX (Assistant Editor)
1990	Congress of United States, Office of Technology Assessment, OTA Reports (Reviewer)
1989-92	Van Nostrand Reinhold (new proposals reviewer)
1987-99	Occupational Environmental Medicine Report (Contributing Editor)

External Peer Review: Promotion and Tenure

2015	Mount Sinai School of Medicine
2012	School of Medicine, University of Virginia; School of Public Health, University of Illinois at Chicago

2011	College of Public Health, East Tennessee State University
2010	Department of Preventive Medicine, State University of New York At Stony Brook
2008	University of Virginia, University of Illinois at Chicago, University of Texas Health Science Center at Houston
2007	University of Illinois at Chicago, Tufts University, Yale University
2005	Uniformed University of the Health Sciences
2004	Dartmouth University School of Medicine, Uniformed Services University of the Health Sciences
2002	University of Pittsburgh
2001	Johns Hopkins University
2000	University of Pennsylvania
1999	Yale University, Univ. of Miami (Fla), UMDNJ-Robert Wood Johnson, Univ. of Utah, Boston University, Uniformed Services University of Health Sciences
1998	Texas A&M University
1997	Jefferson Medical College, University of Maryland
1996	University of Miami (FL), Medical College of Wisconsin
1995	University of Texas, University of Iowa, University of Michigan, University of California, Los Angeles
1994	Tufts University, University of Mississippi

Other External Advising

2006	Asked by WV DHHR to review and assist with Childhood Lead Poisoning Prevention supplemental submission.
2005	Provided opinion to WV DHHR concerning the use of spit tobacco as a harm-reduction cessation therapy. Opinion cited (Ducatman, Meckstroth, Walker, and Swarm) by Governor Joe Manchin III in memorandum of November 1, 2005.
1999	Provided CDC-sponsored Health Officer Seminar in public health environmental issues, June 1999

Grant Peer Review (Study Section)

2016	PAR-15 353 Centers for Agricultural Health and Safety. Disease. Disability, and Injury Prevention and Control Special Emphasis Panel Meeting. Atlanta, GA, May 9-13, 2016
2004-2009	Wayne State University Institute for Population Studies, Health Assessment, Administration, Services and Economics (INPHAASE).
1995	National Cancer Institute RFA, CA-95-002. Occupational Exposure and Cancer Prevention Agency for Toxic Substances Disease Registry, Centers for Disease Control

Other National Peer Review or Service

Vaccine Injury Compensation Program (VICP), Medical Expert Panel, appointed 2015.

Board of Appeals Panel Member. American Board of Preventive Medicine (Current)

Health Consultation: Dimock Groundwater Site, Released May 24, 2016 by USDHHS/Agency for Toxic Substances and Disease Registry, Division of Community Health Investigations (acknowledged external reviewer).

National Occupational Injury Research Symposium, National Institutes of Occupational Safety and Health, Pittsburgh, PA, October 28-30, 2003. Abstract and paper reviewer.

US Environmental Protection Agency: Human Health Research Implementation Plan for the National Health and Environmental Effects Research Laboratory (NHEERL), 2003. Ten-year plan reviewer.

RESEARCH and PUBLICATIONS

Books

Ducatman AM, Liberman DR (Eds). The Biotechnology Industry: "State of the Art Reviews - Occupational Medicine." Hanley and Belfus, Inc. Philadelphia 1991; 6:2, 326 pp.

Monographs

Hornberger GM, Cullen AC, Ducatman A, Jackson JK, Kappel WM, Krannich RS, Matthews V, Robinson AL, Sandler DP, Stout SL, Swackhammer DL, Zhang J. Strategic Research Agenda on the Potential Impacts of 21st Century Oil and Natural Gas Development in the Appalachian Region and Beyond. 2015, 240pp. Health Effects Institute, Boston MA. Available at www.healtheffects.org

Technical Reports

Gerber BJ, Ducatman A, Fischer M, Althouse R. The Potential for an Uncontrolled Mass Evacuation of the DC Metro Area Following a Terrorist Attack: A Report of Survey Findings. Dec 6, 2006. Research Supported by West Virginia Department of Military Affairs and Public Safety. DOI: 10.13140/RG.2.2.28585.39529 · Affiliation: West Virginia University Available online at <http://www.hsp.wvu.edu/r/download/20487> Last Accessed 27 Dec, 2016

Book Chapters

Jin CJ, Wertz C, Ducatman AM. Occupational Toxicology: Applying Toxicology to Individuals. In Ballantyne B, Marrs TC, Syberson T (Eds.). *General and Applied Toxicology* (3rd Ed). Wiley-Blackwell. Chichester, UK. ISBN 978-0-470-7327-4. 3755 pages, chapter pp. 2375-2399.

Ducatman, AM. Multiple Chemical Sensitivity. In Rom WN (Ed). *Environmental and Occupational Medicine* (4th Ed). Lippincott-Raven. Philadelphia, 2006.

Martin C, Ducatman AM. Nonionizing radiation. In Rosenstock L, Cullen M, Brodtkin C, Redlich C (Eds). *Textbook of Clinical Occupational and Environmental Medicine*, 2nd Ed. Elsevier, Philadelphia, 2005. pp. 870-879.

Ducatman AM. Clinical environmental medicine. In McCunney R. (Ed). *A Practical Approach to Occupational and Environmental Medicine*. (3rd Ed). Lippincott Williams and Wilkins. Philadelphia, 2003. pp 737-745.

Ducatman, AM. Multiple Chemical Sensitivity. In Rom WN (Ed). *Environmental and Occupational Medicine* (3rd Ed). Lippincott-Raven. Philadelphia, 1998. pp 891-904.

Ducatman AM. Chemical exposures and causation. In Kaufman HH, Lewin JL (Eds). *The Physician's Perspective on Medical Law*. American Association of Neurologic Surgeons, Park Ridge, IL, 1997. pp 263-278.

Emmett MS, Emmett DC, Simoyi PM, Ducatman AM. The Changing Shape of Public Health Education. In Rowe and Joby (Eds). *Advances in Health Care Research*. Omni Press, Madison, WI, 1996.

Ducatman AM. Recombinant Biology. In Stave GM (Ed). *Physical and Biological Hazards of the Workplace*. Van Nostrand Reinhold, New York, 1994. pp. 479-482.

Ducatman AM. Vaccinia. In Stave GM (Ed). *Physical and Biological Hazards of the workplace*. Van Nostrand Reinhold, New York, 1994. pp. 312-315.

Ducatman AM. Hazardous environments and occupational physicians: Clinical cluster observations and etiologic causation. In Mehlman MA, Upton A (Eds). The Identification and Control of Environmental and Occupational Diseases. Princeton Scientific Publishing, Princeton, NJ, 1994. pp. 55-73.

Ducatman AM. Clinical Environmental Medicine. In McCunney RJ (Ed). A Practical Approach to Occupational and Environmental Medicine (2nd Ed). Little Brown, Boston, 1994, pp. 623-632.

Ducatman AM, Haes DL. Nonionizing radiation. In Cullen MR, Rosenstock L (Eds). Clinical Occupational Medicine. Saunders, Philadelphia, 1994, pp. 646-657.

Ducatman AM. Biotechnology, occupational health issues. In Corn M (Ed). Handbook of Hazardous Materials. Academic Press, San Diego, 1993, pp. 81-89.

Ducatman AM, Liberman DF. Biotechnology Companies. In Sullivan J, Krieger G (Eds). Hazardous Materials Toxicology. Williams Wilkins, Baltimore, 1991, pp. 556-562.

Ducatman AM, Coumbis J. Chemical hazards in the biotechnology industry. In Ducatman AM, Liberman DF (Eds). The Biotechnology Industry: "State of the Art Reviews - Occupational Medicine." Hanley and Belfus, Inc. Philadelphia 1991; 6:2, 193-208.

Liberman DF, Ducatman AM, Fink R. Biotechnology: Is there a role for medical surveillance? In Hyer WC (Ed). Bioprocessing Safety: Workers and Community Safety and Health Considerations. American Society for Testing and Materials, Philadelphia, 1990, pp. 101-110.

Ducatman AM. United States OSHA Laboratory Standard: "Regulation of toxic substances in laboratories." In Liberman DF, Gordon J (Eds). Biohazards Management Handbook. Marcel Dekker, New York, 1989 pp. 403-415.

Federal Reports

Chair (first author), Report Committee. Centers for Disease Control and Prevention, NCEH/ATSDR Peer Review. "Report on Peer Review and Clearance Policies and Functions in the National Center for Environmental Health and the Agency for Toxic Substances and Disease Registry." (Report is now in the Federal Register.)

State Reports

Ducatman A, Ziemkiewicz P, Quaranta J, Vandivort T, Mack B, Van Aken B. Coal Slurry Waste Underground Injection Assessment, Final Report: Phase II. West Virginia University Water Research Institute. July 30, 2010. 261 pp.

Papers Submitted

Yucel Tufekcioglu E, Koksall S, Ducatman A, Erdogan S. Burnout, depression and psychosocial risk factors among call center workers in three different regions.

Papers Published

Ducatman AM, Tacker DH, Ducatman BS, Long D, et al. Quality improvement intervention for reduction of redundant testing. Academic Pathology 2017; 4:1-10 DOI: 10.1177/2374289517707506

Ducatman BS, Hashmi M, Darrow M, Flanagan MB, Courtney P, Ducatman AM. Use of pathology data to improve high-value treatment of cervical neoplasia. Academic Pathology 2016;3: doi:10.1177/2374289516679849

Alfaraj WA, McMillan B, Ducatman AM, Werntz CL. Tetryl exposure: forgotten hazards of antique munitions. Ann Occup Environ Med 2016 April 8; 28:20. doi: 10.1186/s40557-016-0102-7 PMID 27066259

- Ducatman AM, Zhang J, Fan H. Response to prostate cancer and PFOA (letter). *J Occup Environ Med* 2015 Jun;57(6): e61. doi: 10.1097/JOM.0000000000000470 PMID 26053372
- Ducatman A, Zhang J, Fan H. Prostate-specific antigen and perfluoroalkyl acids in the C8 health study population. *J Occup Environ Med* 2015; 57 (1): 111-14 doi10.1097/JOM.0000000000000319 PMID 25563548
- Fan H, Ducatman A, Zhang J. Perfluorocarbons and Gilbert syndrome (phenotype) in the C8 health study population. *Environ Res* 2014: Published on line September, 2014 DOI 10.1016/j.envres.2014.08.011 PMID 25262077
- Van Aken B, Quaranta JD, Mack B, Yu H, Ducatman A, Ziemkiewicz P. Environmental Contaminants in coal slurry intended for underground injection in the state of West Virginia. *J Environ Eng.* 2015. E-Published Nov, 2014 DOI 10.1061/(ASCE)EE.1943-7870.0000874
- Quaranta JD, Mack B, Van Aken B, Ducatman A, Ziemkiewicz P. Practical application of dilution analysis for estimating groundwater effects due to coal slurry injection into underground mine voids. *Mine Water Environment* 2014; 33: 353-361. Published online April 8, 2014. DOI 10.1007/s10230-014-0274-8
- Alshaarawy O, Zhu M, Ducatman AM, Conway B, Andrew ME. Urinary polycyclic aromatic hydrocarbon biomarkers and diabetes mellitus. *Occup Environ Med* 2014;71(6):437-41.
- Innes KE, Wimsatt JH, Frisbee S, Ducatman AM. Inverse association of colorectal cancer prevalence to serum levels of perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) in a large Appalachian population. *BMC Cancer* 2014;14:45.
- Geiger SD, Xiao J, Ducatman A, Frisbee S, Innes K, Shankar A. The association between PFOA, PFOS and serum lipid levels in adolescents. *Chemosphere* 2013. Epub Nov 13, 2013 doi: 10.1016/j.chemosphere.2013.10.005.
- Alshaarawy O, Zhu M, Ducatman A, et al: Polycyclic aromatic hydrocarbon biomarkers and serum markers of inflammation. A positive association that is more evident in men. *Environ Res* 2013;126:98-104,
- Javins B, Hobbs G, Ducatman A, Pilkerton C, Tacker D, Knox S. Circulating maternal perfluoroalkyl substances during pregnancy in the C8 health study. *Environmental Science & Technology*. 2013 Jan8 [Epub ahead of print] PMID; 23272997.
- Bhardwaj R, Ducatman A, Finkel MS, Petsonk E, Hunt J, Beto RJ. Chronic pulmonary dysfunction following acute inhalation of butyl acrylate. *West Virginia Medical Journal* 2012; 108:28-32.
- Abraham RT, Walls RT, Fischer M, et al: Tabletop scenarios for realism in bioterrorism and threat preparedness. *W V Med J* 2012; 108:12-17
- Luo J, Chen YJ, Narsavage GL, Ducatman A. Predictors of survival in patients with non-small cell lung cancer. *Oncol Nurs Forum* 2012; 39(6):609-16.
- Shankar A, Xiao J, Ducatman A. Perfluorooctanoic acid and cardiovascular disease in US adults. *Arch Intern Med* 2012; 172: 1397-1403.
- Hendryx M, Ducatman A, Zullig K, Ahern M, Crout R. Adult tooth loss for residents of us coal mining and Appalachian counties. *Community Dent Oral Epidemiol* 2012: 40: 488-97.]
- Gallo V, Leonardi G, Genser B, Lopez-Espinosa MJ, Frisbee SJ, Karlsson L, Ducatman AM, Fletcher T. Serum perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS) concentrations and liver function biomarkers in a population with elevated PFOA exposure. *Environ Health Perspect* 2012; 120:655-60.
- Bhardwaj R, Dod H, Finkel MS, Dar I, Hobbs GR, Ducatman AM, Warden B, Gharib W, Beto RJ, Jain AC. Left atrial volume by echocardiography in patients with false positive myocardial perfusion scans. *International Heart Journal* 2012; 53:18-22.

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- Shankar A, Xiao J, Ducatman A. Perfluoroalkyl chemicals and elevated serum uric acid in US adults. *Clinical Epidemiology* 2011; 3:251-258.
- Luo J, Hendryx M, Ducatman A. Association between six environmental chemicals and lung cancer incidence in the United States. *J Environ Public Health* 2011; 463701. Doi: 10.1155/2011/463701 Epub 2011 Jul 10.
- Knox SS, Jackson T, Frisbee SJ, Javins B, Ducatman AM. Perfluorocarbon exposure, gender, and thyroid function in the C8 Health Project. *Journal of Toxicological Sciences* 2011; 36(4): 403-410.
- Innes KE, Ducatman AM, Luster MI, Shankar A. Association of osteoarthritis to serum perfluorooctanoate and perfluorooctane sulfonate in a large Appalachian population. *Am J Epidemiol* 2011; 174(4):440-450.
- Shankar A, Xiao J, Ducatman A. Perfluoroalkyl chemicals and chronic kidney disease in US adults. *Am J Epidemiol* 2011; 174(8):893-900.
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- Lopez-Espinosa, MJ, Fletcher T, Armstrong B, Genser B, Dhatariya K, Mondal D, Ducatman A, Leonardi G. Association of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) with age of puberty among children living near a chemical plant. *Environ Sci Technol* 2011; 8160-6.
- Shankar A, Jie X, Ducatman A. Perfluoroalkyl chemicals and chronic kidney disease in US adults. *American Journal of Epidemiology* 2011 10.1093/aje/kwr/171.
- Knox SS, Jackson T, Javins B, Frisbee SJ, Shankar A, Ducatman AM. Implications of early menopause in women exposed to perfluorocarbons. *Journal of Clinical Endocrinology and Metabolism* June 2011; 96(6): 1747-53.
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- Teppala S, Shankar A, Ducatman A. The association between acculturation and hypertension in a multiethnic sample of US adults. *Journal of the American Society of Hypertension* 2010; 4(5): 236-43.
- Rockett IR, Wang S, Stack S, De Leo D, Frost JL, Ducatman AM, Walker RL, Kapusta ND. Race/ethnicity and potential suicide misclassification: window on a minority suicide paradox? *BMC Psychiatry* 2010; 10:35-42.

Steenland K, Tinker S, Shankar A, Ducatman A. Association of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) with uric acid among adults with elevated community exposure to PFOA. *Environ Health Perspect* 2010; 118:229-33.

Qian Y, Ducatman A, Ward R, Leonard S, Bukowski V, Guo NL, Shi X, Vallyathan V, Castranova V. Perfluorooctane sulfonate (PFOS) induces reactive oxygen species (ROS) production in human microvascular endothelial cells: role in endothelial permeability. *Journal of Toxicology & Environmental Health, Part A*, 2010; 73:12, 819-836.

Teppala S, Shankar A, Li J, Wong T, Ducatman A. Association between serum gamma-glutamyl transferase and chronic kidney disease among US adults. *Kidney and Blood Pressure Research* 2010; 33:1-6.

Cain L, Shankar A, Ducatman AM, Steenland K. Association between serum uric acid and chronic kidney disease among Appalachian adults. *Nephrology, Dialysis & Transplantation* 2010; 25(11):3593-3599.

Steenland K, Tinker S, Frisbee S, Ducatman A, Vaccarino V. Association of perfluorooctanoic acid and perfluorooctane sulfonate with serum lipids among adults living near a chemical plant. *American Journal of Epidemiology* 2009; 170:1268-1278.

MacNeil J, Steenland K, Shankar A, Ducatman A. A cross-sectional analysis of type II diabetes in a community with exposure to perfluorooctanoic acid (PFOA). *Environ Res* 2009; 109:997-1003.

Frisbee S, Brooks AP, Maher A, Flensburg P, Arnold S, Fletcher T, Steenland K, Shankar A, Knox S, Pollard C, Halverson J, Vieira V, Jin C, Leyden K, Ducatman A. The C8 Health Project: design, methods, and participants. *Environ Health Perspect* 2009; 117(12): 1873-1882.

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Health effects of oxygenated fuels	1993; 35:980
X-ray technician with ulcerative colitis	1993; 35:650-652
Contact lenses in the chemical industry	1993; 35:650-652
Pros and cons of vaccinia immunization	1992; 34:757-758
Trichloroethane and connective tissue disorders	1992; 34:5-8
In-house medical officers	1991; 33:1206
Hepatitis B Immunization	1991; 33:845

Perry GF, Brissendon R, Chase KH, Hawes Clever L, Ducatman AM, et al.

Benzene and Hodgkin's Lymphoma	1990; 32:775
"Environmental Illness"	1990; 32:211
Hepatitis B Vaccination	1990; 32:5
OSHA and the pharmaceutical and biomedical industries	1989; 31:955-956
Risks of Xylene Substitute	1989; 31:202
Headaches in a bookbinding/ Screen-making company	1989; 31:422-423
Reading asbestos exposure films	1989; 31:728-731

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Contamination from photocopiers	1988; 30:762-766
QMS - Lasergrafix RSI 8024 printer	1987; 29:692
Cutting, sanding, and heat welding polyvinyl chloride	1987; 29:693
Guidelines for use of respirators during pregnancy	1987; 29:782-786
Bacterial growth in eyewash stations	1987; 29:854

Anstadt GW, Chase KJ, Hawes Clever L, Ducatman AM, et al.

Chemical components of diesel fuel	1987; 29:13-14
Vanadium pentoxide exposure	1987; 29:14-17
Screening for hepatic damage	1987; 29:266-267
Research chemist with chronic lymphocytic leukemia	1987; 29:268-269
The costs of defensive medicine	1986; 28:1132-1136

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Areas of Research Interest

1. Clinical Quality Improvement, with an emphasis on laboratory orders and interdisciplinary teamwork for improvement
2. Occupational/Environmental epidemiology and toxicology, including:
 - Perfluorocarbons
 - Neurotoxicity
 - Environmental health and endocrine disruption
 - Use of administrative data in health services research, including workers' compensation
 - Training and evaluation in preventive medicine and public health
 - Disease Clusters

Certificates

Certificate of Completion NIH Office of Human Studies Research computer-based training course on the Protection of Human Subjects, September 1, 2000, Serial: 967812471. Updated continuously as CITI training.

Annual HIPAA and compliance training.

RESEARCH SUPPORT

Submitted in 2016:

Source: US Environmental Protection Agency
Title: Investigating if Unconventional Oil and Gas Development in the Appalachian Region Impacts Environmental Health
Role: Co-Investigator
Outcome: Funding outcome anticipated May, 2017

Source: USDHHS-NIH-NIEHS
Title: Cove Point Maryland Liquefied Natural Gas Facility Project
Role: Co-investigator
Outcome: Not funded

Source: CDC-ATSDR
Title: Brownfield-to-Trail Redevelopment

Role: Co-investigator
Outcome: Approved, not funded

Completed

National

Source: NIH/University of Pittsburgh (primary), WVU subrecipient of NIH grant
Title: National Children's Health Study
Period: 9/28/08-9/29/09
Amount: \$673,725
Role: Co-investigator (10%)

Source: NIH/University of Pittsburgh (primary), WVU subrecipient of NIH grant
Title: National Children's Health Study
Period: 9/27/07-9/28/08
Amount: \$455,467
Role: Co-investigator (10%)

Source: NIOSH/Johns Hopkins University, WVU subrecipient of University of Maryland grant
Title: Occupational Injuries of Developmentally Disabled Sheltered-Workshop Workers in West Virginia
Period: 10/30/07-10/2/09
Amount: \$1,000
Role: Co-investigator

Source: Office of Domestic Preparedness
Title: VMC Development Project for Online Training, Access, and Knowledge Resources for Weapons of Mass Destruction: IOC Phase
Amount: \$1,360,959
Period: 9/1/03-3/31/05
Role: Co-Investigator (6 percent)

Source: USDHHS
Title: West Virginia Prepares: CE Education Partnership
Amount: \$2,242,659
Period: 9/30/02-9/29/05
Role: Co-Investigator (10 percent)

Source: CDC/NIOSH (contract 256809)
Title: Review Database of Chemicals Used in Coal Preparation
Amount: \$2400
Period: 2001-2002
Role: Principal Investigator

Source: CDC/NIOSH & University of Pittsburgh (RO1 OH03646-01A2)
Title: Solvent-Related Functional Brain Abnormalities
Amount: \$227,822
Period: 2001-2004
Role: Co-Investigator (5%)

Source: Department of Health and Human Services (DHHS 233-01-0064)
Title: Online Course and Knowledge Base for Improving Local-Level First and Emergency Responders' Coordination of Healthcare Response and Consequence Management for Weapons of Mass Destruction (Virtual Medical Campus)

Period: 10/1/02-3/31/04
Amount: \$258,372
Role: Co-Investigator (10%)

Source: CDC/UNC
Title: SE Public Health Training Center Project
Period: 9/1/01-8/31/05
Amount: \$47,000
Role: Co-Investigator; WVU-PI Subrecipient agreement (5%)

Source: CDC (H75/CCH322130)
Title: Center for Healthy Communities
Period: 2002-2003
Amount: \$1,997,974
Role: Co-Investigator (5%)

Source: CDC/NIOSH (T01/CCT/310455-09)
Title: New Directions in Occupational Health
Period: 2001-2005
Amount: \$292,000/yr (7/1/02-6/30/03)
Role: Co-Investigator (10%)

Source: NIOSH
Title: New Directions in Occupational Health
Period: 1997-2001
Amount: \$403,419/yr.
Role: Principal Investigator

Source: Centers for Disease Control and Prevention
Title: Work Organization and Depression
Period: 1998-2000
Amount: \$106,923
Role: Co-Investigator and Subrecipient Agreement with University of Maryland

Source: Environmental Protection Agency
Title: Occupational Asthma: in and out of the workplace (national conference)
Period: 1998
Amount: \$7,166
Role: Principal Investigator

Source: National Institute for Occupational Safety and Health
Title: Workshop on Solvent Exposure among Railroad Workers
Period: 1996 (Nov 7-8)
Amount: \$25,000
Role: Co-Investigator (AOEC grant)

Source: National Institute for Occupational Safety and Health - R13/CCR312621-01
Title: Educational Conference on Occupational Safety and Health for Small Business
Period: 1995-1996
Amount: \$12,000 (+ additional state matching funds)
Role: Co-Principal Investigator

Source: National Institute for Occupational Safety and Health
Title: New Directions in Occupational Health Training - T01/CCT310455-01
Period: Fiscal Year 1994-1997
Amount: \$488,460/year
Role: Principal Investigator, Director

Source: Centers for Disease Control and Prevention
Title: West Virginia University Prevention Center: Addressing the Risk Factors in Rural Appalachia
Period: 1994-1998
Amount: \$100,000 of \$1,000,000 grant
Role: Co-Investigator

Source: National Institute for Occupational Safety and Health
Title: National Environmental Education and Training Center
Period: 1994-1995
Amount: \$13,500 of \$86,500
Role: Co-Investigator

Source: Department of Energy, National Research Center for Coal & Energy
Title: Winfield, WV, Risk Communication
Period: 1994-1995
Amount: \$10,000

Source: EPA Hazardous Substance Research Center
Title: Integrating Safety and Waste Management Practices in Laboratory Organizations
Period: January, 1991 - January, 1992
Amount: \$42,664
Role: Principal Investigator

Source: DOE/Oak Ridge Associated Universities
Title: IND for DTPA
Period: 1990-1992
Role: Co Investigator

Source: EPA Hazardous Substance Research Center
Title: Hazardous Substance Management Program; Laboratory Safety Training Program - R-815734-01
Period: 3/89 - 3/90
Amount: \$20,000
Role: Principal Investigator

State

Source: West Virginia Department of Health and Human Resources
Title: GEO-22: Coal Slurry ATSDR Assessment
Period: 4/1/09-3/31/10
Amount: \$221,519
Role: Principal Investigator

Source: West Virginia Insurance Commission
Title: WVU Data Analysis Project
Period: 4/1/07-2/29/08
Amount: \$242,627
Role: Principal Investigator

Source: West Virginia Insurance Commission
Title: WVU Data Analysis Project
Period: 1/1/07-12/31/07
Amount: \$242,627
Role: Principal Investigator, 10% support

Source: West Virginia Higher Education Policy Commission
Title: Health Study of Hardy County

Period: 7/1/05-6/30/07
Amount: \$250,000/yr
Role: Principal Investigator, 10% support

Source: WV Workers' Compensation Division
Title: Workers' Compensation Data Analysis
Period: 1/1/06-12/31/06
Amount: \$454,277
Role: Principal Investigator, 10% support

Source: West Virginia Insurance Commission
Title: Insurance Commission-WVU Data Analysis Project
Period: 3/1/06-12/31/06
Amount: \$165,683
Role: Principal Investigator, 10% support

Source: WV Workers' Compensation Division
Title: Medical Support Project
Period: 7/1/05-12/31/05
Amount: \$353,104
Role: Clinician, 10% support

Source: WV Bureau of Employment Programs
Title: Workers' Compensation Data Analysis Project
Amount: \$203,000
Period: 7/1/05-12/31/05
Role: Principal Investigator (10 percent support)

Source: WV Workers' Compensation Division
Title: Medical Support Project
Amount: \$706,209
Period: 7/1/04-6/30/05
Role: Clinician (10 percent)

Source: WV Bureau of Employment Programs
Title: Workers' Compensation Data Analysis Project
Amount: \$234,855
Period: 7/1/04-6/30/05
Role: Principal Investigator (10 percent, 8% FY 2005)

Source: WV Higher Education Policy Commission/WV Economic Development Office
Title: WVU Health Study of Hardy County
Amount: \$250,000
Period: 7/1/03-6/30/05
Role: Principal Investigator (10%)

Source: WV Bureau of Employment Programs
Title: Workers' Compensation Data Analysis Project
Amount: \$230,666
Period: 7/1/03-6/30/04
Role: Principal Investigator (10 percent)

Source: WV Bureau of Employment Programs
Title: WVU Transitional Medical Support Project
Amount: \$500,019
Period: 7/1/03-6/30/04

Role: Co-Investigator (10 percent)

Source: WV Department of Health & Human Resources
Title: Childhood Lead Poisoning Prevention project
Period: 7/1/02-6/30/03
Amount: \$10,000/yr (contract)
Role: Principal Investigator (5%)

Source: WV Workers' Compensation Division
Title: WVU-Office of Medical Services Support
Period: 1/1/99-6/30/02
Amount: \$1,382,333/yr.
Role: Principal Investigator

Source: WV Department of Health & Human Services
Title: Childhood Lead Poisoning Prevention Project
Period: 7/01- 6/02
Amount: \$8,071
Role: Principal Investigator

Source: WV Bureau for Employment Programs
Title: Enhanced Approach to Health Care Cost Data Systems and Analysis
Period: 7/1/02-6/30/03 - \$348,416
1/01-12/01 - \$139,945
1/99-12/01 - \$378,850
Role: Co-Investigator through 2001; PI in 2002 (15%)

Source: WV Workers' Compensation Division
Title: Medical Support and Medical Services Contract
Period: 1/1/03-6/30/03
Amount: \$813,355
Role: Co-Investigator (15%)

Source: WV Bureau of Employment Programs
Title: WVU-Office of Medical Services Support
Period: 1/01-6/30/03 - \$1,382,333
1/01-12/01 - \$1,291,726
1/99-12/01 - \$3,473,939
Role: Co-Investigator through 2001, Principal Investigator in 2002 (10%)

Source: WV Bureau of Employment Programs
Title: Enhanced Approach to Health Care Cost Data Systems and Analysis
Period: 1/01-12/01 - \$139,945
1/99-12/01 - \$ 378,850
Role: Co-Investigator (5%)

Source: WV Bureau of Employment Programs
Title: Assisting Policy (Targeted Analysis Project)
Period: 7/02-12/02 - \$220,614/yr
7/01-6/02 - \$200,149
Role: Co-Investigator (5%)

Source: WV Workers' Compensation Division, Bureau of Employment Programs, RIA/WC Research
Title: Health Care Cost Data Systemization & Analysis Project
Period: 1999-2002
Amount: \$812,039

Role: Principal Investigator

Source: WV Workers' Compensation Division

Title: Small Business Safety Outreach

Period: 1999-2002

Amount: \$214,968/yr.

Role: Co-Investigator

Source: WV Workers' Compensation Division

Title: Targeted Analysis of Outcomes and Effectiveness of Workers' Health Care Services and Interventions

Period: 1999-2002

Amount: \$163,977/yr

Role: Co-Investigator

Source: West Virginia Bureau of Employment & Education

Title: Evaluation of Managed Care Occupational Health Service

Period: 1996-99

Amount: \$88,201

Role: Co-Investigator

Source: West Virginia Department of Health and Human Services, Bureau for Public Health, CDC grant

Title: Lead Poisoning Prevention

Period: 1998-2001

Amount: \$10,000/yr

Role: Consultant

Source: West Virginia Department of Labor, Workers' Compensation Division

Title: Health Care Advisory Panel

Period: 7/92-7/98

Amount: \$10,000/yr

Role: Occupational Medical Illness Protocol

Source: West Virginia Bureau of Employment

Title: Trend and Cluster Analysis

Period: 1996-98

Amount: \$55,265

Role: Co-Investigator

Source: West Virginia Bureau of Employment

Title: Point of Sale Drug Utilization Review

Period: 1996-98

Amount: \$55,815

Role: Co-Investigator

Source: West Virginia Bureau of Employment

Title: Vertically Integrated Intervention Access

Period: 1996-97

Amount: \$284,492

Role: Principal Investigator

Corporate and Foundation

Source: Claude Worthington Benedum Foundation

Title: Interprofessional Education: Translating Research into Improved Practice in Rural Hospitals

Period: December 15, 2014 – Dec 15, 2015
Amount: \$10,000
Role: Subrecipient co-principle investigator

Source: Health Effects Institute (Professional Services Agreement with WVU)
Title: Special scientific committee on unconventional oil and gas development
Period: August, 2014-August, 2015
Amount: \$10,500 and related expenses
Role: Participant, document writer, concerning regional and national research needs

Source: Claude Worthington Benedum Foundation
Title: Project Hope
Period: 1/1/2014-12/31/2014
Amount: \$150,000 for entire grant, \$50,000 for specific project
Role: Author and project leader for the Quality Clinical Health Care Analytics aim (Suresh Madhavan, PI for entire grant).

Source: Claude Worthington Benedum Foundation
Title: WVU School of Public Health Project (20110033 – 2W537)
Period: 4/1/11-9/30/12
Amount: \$185,000
Role: Principal Investigator

Source: Brookmar, Inc.
Title: C8 Health Project Supplement
Period: 7/1/08-8/31/08
Amount: \$8,000
Role: Principal Investigator

Source: Brookmar, Inc.
Title: Data Hosting for the C8 Health Project
Period: 7/1/06-6/30/08
Amount: \$315,044
Role: Principal Investigator

Source: Brookmar, Inc.
Title: Data Hosting for the C8 Health Project
Period: 6/1/06-6/30/08
Amount: \$54,463
Role: Principal Investigator

Source: Brookmar, Inc.
Title: Quality Assurance for the C8 Health Project
Period: 7/1/06-6/30/08
Amount: \$37,397
Role: Principal Investigator

Source: BrickStreet Mutual Insurance Company
Title: WVU Data Analysis Project
Period: 1/1/08-12/31/08
Amount: \$448,668
Role: Principal Investigator

Source: BrickStreet Mutual Insurance Company
Title: BrickStreet Mutual-WVU Data Analysis Project

Period: 1/1/07-12/31/07
Amount: \$417,385
Role: Principal Investigator, 8% support

Source: Brookmar, Inc.
Title: C8 Health Projects (several)
Period: 7/25/06-8/31/08
Amount: \$373,510
Role: Principal Investigator (effort varies by subproposal)

Source: Brookmar, Inc.
Title: Hourly Consulting for C8 Health Project
Period: 7/1/05-present
Amount: service contracted to UHA
Role: Consultant

Source: Brookmar, Inc.
Title: Data Hosting for C8 Health Project
Period: 7/1/06-6/30/08
Amount: \$365,510
Role: Principal Investigator

Source: MIT Licensure Agreement with COSTAR
Title: Mixed Waste Disposal OSP #74329
Period: 1989-91
Role: Laboratory Director

University

Source: West Virginia University
Title: Summer Research Project for M1 Student: On Line Interactive Resources for Epidemiology
Period: Summer, 1997
Amount: \$1,000
Role: Principal Investigator

Source: Medical University of South Carolina
Title: Environmental Consultant to Major DOE grantee
Period: 1994-96
Amount: \$10,000/year
Role: Consultant

Source: Office of the Dean of Graduate Studies
Title: Summer Research Project for M1 Student: State Policy for Controversial Compensable Diagnosis
Period: Summer, 1996
Amount: \$2,000
Role: Principal Investigator

PROFESSIONAL AFFILIATIONS

Current Professional and Scientific Organizations and Societies

- **Fellow**, American College of Occupational Medicine
- **Fellow**, American College of Physicians
- American Teachers of Preventive Medicine

Offices in Professional and Accreditation Organizations

- 2012-2014 Member, West Virginia State Public Health Assessment Advisory Group
- 1999-2004 Chair, Residency Review Committee, Preventive Medicine. Accreditation Council on Graduate Medical Education
- 1999-2001 Steering Committee, SE Public Health Leadership Institute (NC, SC, TN, VA & WV)
- 1988-92 Council on Scientific Affairs, American College of Occupational Medicine
- 1988-93 Chair, Occupational & Clinical Toxicology Committee, American College of Occupational Medicine
- 1993-2002 Trustee, American Board of Preventive Medicine
- 1986-2003 Occupational Medicine Practice Committee, American College of Occupational Medicine

National/International Committees of Professional Organizations or Foundations

- International Agency for Research on Cancer (IARC). IARC Monographs Working Group for Volume 115 – “Some Industrial Chemicals.” Lyon, France. March, 2016
- Health Effects Institute. Unconventional Special Committee on unconventional oil and gas development. 2014-2015
- American College of Occupational and Environmental Medicine. Environmental Medicine Committee. 1992-2002
- American National Standards Institute (ANSI). Medical Surveillance Subcommittee Z136, Safe use of lasers. 1989-1992.
- American College of Occupational and Environmental Medicine, Practice Committee, 1985-94
- Office of Science and Technology Policy. Study on Risk Assessment, 1985-1986.

HONORS AND AWARDS

- First author publication cited among “Compilation of Best Papers, 1979-1991.” J Occup Environ Med 2016; 58(2); 111-13
- Appointed, Best Doctors in America, November, 2015
- Inducted as faculty to WVU chapter of Delta Omega, the national honor society in public health, May, 2014
- Appointed to the Governor’s Advisory Council on Substance Abuse, August 2011.
- Appointed Guest Researcher, National Institute of Occupational Safety and Health (NIOSH), September 2010.
- NCEH/ATSDR (National Center for Environmental Health and Agency for Toxic Substances and Disease Registry, CDC) Director’s Award for Outstanding Service, October 2008.
- The Department of Community Medicine was selected as the “Health Care Heroes” for the state of West Virginia, August 2008.
- Invited attendee, NIOSH Digital Imaging Workshop, March 11-13, 2008, Rockville, MD.
- Appointed Chair, Board of Scientific Counselors, National Center for Environmental Health/Agency for Toxic Substances and Disease Registry, 2007.
- Selected as one of the Best Doctors in America, by Best Doctors, Inc., Aiken, SC (2007-2010).
- Nominated to the US Task Force on Community Prevention Services, CDC, 2006.
- Appointed by the US Secretary for Health and Human Services to the Board of Scientific Counselors, National Center for Environmental Health/Agency for Toxic Substances and Disease Registry, 2006.
- Appointed Clinical Professor, West Virginia School of Osteopathic Medicine, 2004.
- Department of Community Medicine: Dean’s Award for Excellence in Research, 2002.
- Certificate of Appreciation for Service to the West Virginia Public Health Association, 2000.
- On behalf of Department of Community Medicine, State Health Education Award for Outstanding Organizational Leadership to SHEC and Health Promotion in West Virginia, 1999.

- Certificate of Appreciation, Service to the Executive Council, West Virginia Public Health Association, 1999.
- Robert A. Kehoe Award of Merit, American College of Occupational and Environmental Medicine, 1998.
- Harriet Hardy Award for the physician who exemplifies the highest ideals of occupational and environmental medicine. New England College of Occupational and Environmental Medicine, 1997.
- Adolph H. Kammer Merit in Authorship Award, American College of Occupational and Environmental Medicine, 1994.
- Top Ten Percent Award, Teachers of Introduction to Clinical Medicine, West Virginia University, 1994.
- Robert J. Hilker Lectureship Award, American College of Occupational and Environmental Medicine, 1993.
- Navy Achievement Medal, 1984
- Navy Letters of Commendation (several)
- Finalist, Leo Friend Award for Best Professional Paper, 1988
- Fellow, American College of Occupational Medicine
- Fellow, American College of Physicians

Postgraduate Presentations and Teaching

American College of Nutrition (Podium Presentation): Personal poisons: the role of nutrition. San Diego, CA. November 10, 2016

Inter-professional Education Speaker Series: Across professions and institutions, what does it take to improve care? August 26, 2016, at West Virginia University

WV Data for Improving Clinical Orders. Panel address to WV Choosing Wisely Quality Improvement meeting. Charleston, WV. Sponsored by CAMC Institute and West Virginians for Affordable Health Care, May 6, 2015

Toxicologic Challenges: Population and Occupational Health Risks. Keynote address to the 28th Annual meeting of the Allegheny-Erie Society of Toxicology Regional Chapter. May 16, 2014

West Virginia's Public Health: What Can We Achieve? Keynote address to the West Virginia Public Health Association Annual Conference, September 19, 2012.

Coal Slurry Waste Underground Injection Study. Presented to the Joint Committee on Water Resources of the WV Legislature, August 9 and 10, 2010 (two presentations).

Air Pollution and Climate Change. Presented to PUBH 605: Introduction to International Public Health, June 16, 2010.

Environmental Issues in West Virginia. Presented to the Occupational Medicine Grand Rounds, December 1, 2009.

Secondhand Smoke, Primary Prevention. Presented to the Department of Medicine Grand Rounds, October 20, 2009.

Environmental Questions and Community Concerns: The Role of Public Health Research. Presented to PUBH 706: Current Research Issues, August 27, 2009.

Air Pollution and Climate Change. Presented to PUBH 605: Introduction to International Public Health, June 10, 2009.

Environmental Issues in West Virginia. Presented to the Occupational Medicine Grand Rounds, May 12, 2009.

From the Mountains to the Valleys: Recent Environmental Issues in West Virginia. Presented to the Department of Medicine Grand Rounds, February 20, 2009.

Low Back Pain. Presented to the Occupational Medicine Grand Rounds, November 11, 2008.

Environmental Health Issues in West Virginia. Presented to the Annual Conference of the West Virginia Public Health Association, September 17, 2008.

Lead and Health. Presented to the Occupational Medicine Grand Rounds, August 26, 2008.

Air Pollution and Climate Change. Presented to PUBH 605: Introduction to International Public Health, June 11, 2008.

Pandemic Influenza. Presented to CCMD 712: Epidemiology and Biostatistics (for medical students), November 1, 2007.

Air Quality. (Television presentation, seen in Clarksburg/Morgantown – WBOY, Huntington/Charleston – WOWK, Wheeling/Steubenville – WTRF, Beckley/Bluefield/Lewisburg – WVNS), June 11, 2007.

Asbestos in Buildings and Health Effects. Public Health Grand Rounds. November 30, 2006. Simulcast, web-archived, and used for training at WVU. Used by permission at other universities.

Influenza: Preparing to Prevent a Pandemic Disaster – Pandemic and Other Public Health Concerns. The Tuberculosis Association of Ohio County (WV), November 14, 2006.

Toxic Industrial Symposium (ATSDR and WV Poison Center, Charleston, WV). Toxic Industrial Chemicals. September 11, 2006.

State Health Education Council of West Virginia. Trails to a Healthy West Virginia: Pandemic Flu and Mass Migration. May 3, 2006.

Southeast Public Health Leadership Center. Disease Clusters, Causation, and Common Sense. Teleconference, February 16, 2005.

Wheeling-Charleston Diocese, Appalachian Institute. Health: A Comprehensive Checkup for Rural West Virginia. Being Well in Rural West Virginia Conference. Bishop Hodges Pastoral Center, Huttonsville, WV. April 22, 2005.

US National Conservation Training Center. Emerging Contaminants and Water Supply Workshop. Environmental questions and Community Concerns: The Role of Public Health Research. September 19, 2005.

Biology Department Invited Seminar. Hardy County Research Findings and Plans. October 17, 2005.

Parkersburg Academy of Medicine. Pandemics. November 8, 2005.

Public Health Grand Rounds. Influenza: Preparing to Prevent a Pandemic Disaster. December 8, 2005.

Hardy County (West Virginia) Health Care Professionals. Cancer and Other Health Outcomes in Hardy County. Moorefield, WV. November 15, 2004. (Grant funded, 30 attendees).

West Virginia Public Health Association. Epidemiology of Disease Clusters. Huntington, WV. September 23, 2004.

American Association of Legal Nurse Consultants Fifteenth National Educational Conference. Disease clusters, causation, and common sense. Chicago, IL, April 1, 2004.

Respiratory Risk Factors in a Rural State. West Virginia Lung Association, Morgantown, WV. March 27, 2004.

Media Science Forum: Making Prevention Research News. Research America! And the West Virginia Prevention Research Center (panelist).

Molds. Pediatrics Grand Rounds. December 17, 2003.

Gatekeepers' Response to a Bioterrorism Attack. Eighth Annual Mountain Retreat, Snowshoe, WV. September 18, 2004.

Healthy West Virginia Summit 2003. Preventing chronic illness: closing the gap between research and prevention. August 4, 2003, Stonewall Resort, Lewis County, WV.

West Virginia Bar Association. Understanding disease clusters and causation in environmental medicine. Greenbrier Hotel, White Sulphur Springs, WV, July 12, 2003.

WAJR, Morgantown, WV. ("Talk Radio"). Mold. April 3, 2003.

National Institute of Occupational Safety and Health. Best Practices in Workplace Surveillance Conference. Identification and tracking of workplace injury. Illness, exposure, and hazards. A system for rapid analysis of transactional insurance data to identify trends in costs of work-related injuries. Cincinnati, OH, November 2001.

American Occupational Health Conference on behalf of ACOEM Millennium Series: Occupational Disease. San Francisco, CA, April 2001.

Massachusetts Medical Society. Environmental Issues in Clinical Practice. Cluster Analysis in Environmental Medicine. Boston, MA. Earth Day, April 22, 2001.

Governor's Occupational Safety and Health Conference (PA). "What's new in workers' health?" Hershey, PA, October 29, 2001

Fifth Annual Cost-Effectiveness Evaluation and Management of Low Back Pain Conference. The epidemiology of low back injuries. Morgantown, WV, November 5, 1999.

75th West Virginia Public Health Association Meeting. Health Effects of Air Pollution, Canaan Valley, WV, September 23, 1999

Sentinel Events in the Clinic. **Cleveland Clinic Foundation**, Cleveland, OH, June 4, 1998.

Lead Poisoning, Issues and Treatment. **Northern Panhandle Childhood Lead Poisoning Prevention Project**, Wheeling, WV, May 14, 1998.

Occupational Asthma: in and out of the workplace. **NIOSH-West Virginia University Conf.** Session Co-Chair Overview and Clinical Session, Morgantown, WV, April 30, 1998.

Core Curriculum in Environmental Medicine. **American College of Occupational and Environmental Medicine**, Nashville, TN, October 30-31, 1998.

Coping in the Trenches. **New England College of Occupational and Environmental Medicine**, Boston, MA. December 5, 1997.

Inhalation and Toxicity Injuries. **West Virginia University School of Medicine**. Emergency Medicine Grand Rounds, October 2, 1997.

Multiple Chemical Sensitivity. **AASCIF Claims/Rehab. Seminar**, Charleston, WV, September 18, 1997.

Occupational and Environmental Cluster Management. **American College of Occupational and Environmental Medicine**. Orlando, FL, May 13, 1997.

Occupational Asthma. **Tri-State Medical Association**. Lakeview, WV, September 27, 1996.

Laser eye injuries in academic research settings. **NIOSH Division of Safety Research**. Morgantown, WV, August 15, 1996.

Pesticides: Health-related issues. **Assoc. Southern Feed, Fertilizer, and Pesticide Control Officials**. Lakeview Conference Center, Morgantown, WV, June 18, 1996.

Low-dose risks, reproductive hazards, and risk assessment. **Medical University of South Carolina, Department of Family Medicine**. Spoleto Festival. Charleston, SC, May 25, 1996.

Epidemiology and cluster assessment. **American College of Occupational and Environmental Medicine**. Core Curriculum in Environmental Medicine. Alexis Park Resort, Las Vegas, May 6-7, 1995 and San Antonio, TX, April 27-28, 1996.

"Twitchy airways in the 21st century." **Industrial Health Foundation Conference**. Occupational Health Issues of the Next Decade. Orlando, FL, March 28, 1996.

The wherefore of risk assessment and discussion. **Medical University of South Carolina Environmental Hazards Assessment Program**. Charleston, SC, October 26, 1995.

Risk in the practice of medicine and risk assessment as it extends to the community. **Medical University of South Carolina Environmental Hazards Assessment Program**. Charleston, SC, October 26, 1995.

Air Pollution (outdoor). **American College of Occupational and Environmental Medicine**. Environmental exposures and susceptibility: a clinical and policy focus. Las Vegas, May 4, 1995.

Three mini-epidemics: goodwill and regulation. **US Dept of Labor**, Occupational Safety and Health Administration, Washington, DC, April 24, 1995.

Public Health in the Clinic: Three West Virginia Mini-epidemics. Internal Medicine Grand Rounds. **West Virginia University**, Morgantown, WV, March 31, 1995.

Disease clusters & causation. **Michigan Occupational and Environmental Medicine Association**. Lansing, MI, June 3, 1994.

Keynote address: Health care reform, you, and me. Mixed chemical exposures. **Midwest Center for Occupational Health and Safety**. Minneapolis, MN, March 15-16, 1994.

Occupational physician in environmental health. **Southern Medical Association**. 87th Annual Scientific Assembly, New Orleans, October 19, 1993.

Introduction to environmental medicine (ATSDR-sponsored course). **American College of Occupational/Environmental Medicine**. State of the Art Conference. Dallas, TX, October 27, 1993.

Between "B"-ing and nothingness (The ILO system). **CDC-NIOSH**, invited speaker. Morgantown, WV, July 14, 1993.

Occupational Health and Environmental Medicine: comparisons, not contrasts. **CSOMA Robert J. Hilker, MD, Award Lecture.** Chicago, March 19, 1993.

Occupational Epidemiology. **Thirty-fourth Navy Occupational Health and Preventive Medicine Workshop.** Norfolk, VA, February 27, 1993.

Occupational health and the primary care physician. **Philadelphia County Medical Society.** October 19, 1992.

Environmental Medicine: What it is and isn't. **American Occupational Health Conference.** Washington, DC, May 6, 1992.

Workplace cancer clusters: causation and the limits of technical common sense. **Semiconductor Safety Association,** 14th Annual Meeting, Phoenix, AZ. April 6, 1992.

Disease clusters: environmental causation and common sense. **MIT-Lincoln Laboratory Distinguished Lecture Series.** Lexington, MA, March 18, 1992.

Grand Rounds. **Baystate Medical Center,** Springfield, MA, March 11, 1992.

Keynote Address: Occupational Environmental Medicine: Comparisons and Contrasts. **American College of Occupational Medicine State of the Art Conference.** St. Louis, MO, October 30, 1991.

Introduction. Conference on Laboratory Waste Management. **Massachusetts Institute of Technology,** Cambridge, MA, October 24, 1991.

Solvents in the workplace. Hazard Control in Semiconductor Manufacturing. **Semiconductor Industry Association.** Westborough, MA, October 17, 1991.

Biotechnology Industry Issues: Genetic Engineering and Worker Health. **American College of Occupational Medicine.** San Francisco, CA. May 2, 1991.

Epidemiology of Toxic Clusters. Neurology in the 1990's, **Harvard Medical School.** Boston, MA, March 23, 1991.

OSHA Laboratory Standard: Regulation of Toxic Substances in Laboratories and Waste Management in Laboratories. U.S. Dept of Commerce, **National Institute of Standards and Technology.** Gaithersburg, MD, Sept. 26, 1990.

Variability in interpretation of radiographs of x-rays for asbestos abnormalities: problems and solutions. **Collegium Ramazzini.** The Third Wave of Asbestos Disease. New York. June 7, 1990.

Workplace Medical Surveillance: Goals, Principles, and Breaking the Rules. **American Chemical Society,** Division of Chemical Health and Safety. Boston, MA, April 24, 1990.

Occupational Health Aspects of Biotechnology. **Society for Occupational and Environmental Health.** Washington, DC, April 24, 1990.

Approaching a Cancer Cluster. Thirty-Second Environmental Health Center Conference. **United States Navy,** Virginia Beach, VA. March 23, 1990.

Cancer Clusters. The Charles A. Dana Seminar Series in Environmental Epidemiology. New York, **Mt. Sinai Medical School,** February 16, 1990.

Conference on Laboratory Waste Management (conference organizer, supported by EPA #R-815734-01.) **Massachusetts Institute of Technology,** Cambridge, MA, January 31, 1990.

Protecting research laboratory workers. **American College of Occupational Medicine Conference.** Boston, MA, May 5, 1989.

Postgraduate seminar: Medical Surveillance Programs. **American College of Occupational Medicine Conference.** Boston, MA, May 1, 1989.

Biotechnology and Occupational Health. **American Public Health Association.** Annual Meeting, Boston, MA, November 14, 1988.

Eighth International Pneumoconiosis Conference. Pittsburgh, PA, August 23-26, 1988.

1. "B-Readers" and asbestos medical surveillance
2. Smoking and radiologic opacities in U.S. Navy asbestos workers
3. Asbestos medical surveillance population: predominant left-sided location of unilateral plaques

Asbestos medical surveillance: clinical and radiographic basis. **American Occupational Medical Association Conference.** New Orleans, LA, April 29, 1988.

Clusters, environmental causation, and common sense. **American Occupational Medical Association Conference.** New Orleans, LA, April 27, 1988.

Grand Rounds: Disease Clusters. **Mount Auburn Hospital.** Cambridge, MA, July 14, 1988.

Government regulation and occupational exposures of biotechnology researchers and production staff. Biotechnology, Regulation, and Human Health Symposium. **Massachusetts Institute of Technology,** August 7, 1987.

Risks from lithium batteries. The New Technologies Health and Safety Institute. **Worcester Polytechnic Institute.** Worcester, MA, May 28, 1987.

Occupational Health Issues in Biotechnology. **American Occupational Medical Association Conference.** Philadelphia, PA, April 1987.

An occupational physician looks at low back pain. Environmental Health Center Annual conference. **United States Navy.** Virginia Beach, VA, April 1984.

Potential health hazards of lithium manganese oxide and lithium carbon monofluoride batteries. **Power Sources Symposium.** Cherry Hill, NJ, June 1984.

Recognition of disease caused by chemical exposure: taking the history. Risk Management of Toxic Substances: Recognition, Prevention, Potential Liability. The **Hampton Institute** Center for Marine and Coastal Studies. Hampton, VA, July 1984.

Potential health hazards of lithium thionyl chloride batteries. **Lithium Battery Tri-Service Working Group.** San Diego, CA, February 1984.

Worker fitness and health responsibilities. **American Public Works Association.** Minneapolis, MN, May 1983.

Neurotoxicity of industrial solvents. Current Concepts for Cardiopulmonary and Occupational Medicine, **Midwest Center for Occupational Health,** St. Paul, MN, March 1983.

PCB's, PBB's, Dibenzodioxins, and resources for assistance. Medical and Legal Management of Workplace Health Concerns. **Midwest Center for Occupational Health.** Minneapolis, MN, November 1982.

OTHER ACTIVITIES

Community Activities:

- Southwest Pennsylvania Environmental Health Project (www.environmentalhealthproject.org). Scientific Advisory Board Member, 2016-2019 (3-year term)
- United Way Volunteer Leader, WVU School of Medicine Faculty, 2004
- Troop 62 Committee, Boy Scouts of America, Morgantown, WV, 1996-97
- Emergency Planning Boards, Cities of Cambridge and Lexington, MA, 1989-1992
- Environmental Hazards of Fires (lecture series) City of Cambridge, MA, Fire Department, 1990, 1992
- Health Right Free Clinic, Morgantown, WV Environmental Consultant, 1992-1994
- Numerous lectures to community groups, religious organizations, senior citizen groups, rotary clubs, PTAs, boards of education, etc., concerning environmental health and safety.
- Community Health Advocacy and Transformation Team. Monongalia County Health Department, 1997-98.

REPORT OF ALAN DUCATMAN, M.D.

In the case of Sullivan, et. al. v. Saint-Gobain Performance Plastics Company,

No. 5:16-cv-000125-GWC (D. Vt.)

Exhibit 2 (Supporting References)

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REPORT OF ALAN DUCATMAN, M.D.
In the case of Sullivan, et. al. v. Saint-Gobain Performance Plastics Company,
No. 5:16-cv-000125-GWC (D. Vt.)
Exhibit 3 (Prior Testimony)

Year	Case Name	Civil Action # (or claim #)	Court
2017	<i>Cooper vs Axiall LLC et al.</i>	5:16-cv-00148	US Dist. Ct. for the Northern Dist. Of WV
2017	<i>Estate of Carmella Cianni v HHS</i>	16-1052-UNJ	
2014	Parsons Chapman Oliver Greynolds v. Frontier & AFL	13-C-1478	Circuit Court of Kanawha County, WV
2014	Russell L. Evans v Equipment Transport LLC	WC390 C11523	PA Dept of Labor & Industry Bureau of WC
2014	Richard Burkhammer v. Pratt and Whitney 555-097-126	555-0971727	WC Office of Judges
2014	Jason Glover v. Pratt and Whitney 555-097-132	555-08132	WC Office of Judges
2014	Michael Linton v. Pratt and Whitney 555-097-194	555-097194	WC Office of Judges
2014	Bolyard v. First Energy	13-C-15	Circuit Court of Preston County, WV
2014	Murphy Gray & Sanson v. Ferrellgas	10-C-79	Circuit Court of Nicholas County, WV